

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

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Applicant's or agent's file reference SV02A63-EUR	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/50990	International filing date (<i>day/month/year</i>) 11.12.2003	Priority date (<i>day/month/year</i>) 30.12.2002
International Patent Classification (IPC) or both national classification and IPC B29C51/14, B29C51/00, D04H1/48, D04H13/00, D04H1/00, B32B5/26, B32B13/02, B60R13/02		
Applicant EUROPLASTICA S.R.L.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 9 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand 25.09.2004	Date of completion of this report 06.05.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Barathe, R Telephone No. +31 70 340-3519 

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International application No. **PCT/EP 03/50990**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-43 as originally filed

Claims, Numbers

1-83 as originally filed

Drawings, Figures

1-5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-9,17,20,21,24-26,29-34,36-69,73-81,83
	No: Claims	1,10-16,18,19,22,23,27,28,35,70-72,82
Inventive step (IS)	Yes: Claims	2-9,17,20,21,24-26,29-34,36-69,73-81,83
	No: Claims	1,10-16,18,19,22,23,27,28,35,70-72,82
Industrial applicability (IA)	Yes: Claims	1-83
	No: Claims	

2. Citations and explanations

see separate sheet

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1) Prior art

D1: EP-A-0 174 813 (COLLINS & AIKMAN CORP) 19 March 1986 (1986-03-19)

D2: WO 02/47877 A (POLYMER GROUP INC) 20 June 2002 (2002-06-20)

D3: US-A-4 315 965 (MASON CHARLES R ET AL) 16 February 1982 (1982-02-16)

2) Novelty Art. 33 (2) PCT

2.1) claim 1

D1 discloses a panel of blended thermoplastic fibers which have been interlaced by needling (page 3 lines 13-19). The fibrous web has been pressed and heated in such a way that fusion bonds are located predominantly adjacent to the inner or the back surface, while on the front side very few, if any, fusion bonds are found (page 8 lines 23-27, figure 5).

D1 also explains that the low melting fibers have melted and fused on the back surface, and in so doing have lost their fibrous form. This fusion imparts stiffness and rigidity to the nonwoven fibrous web. On the front surface, however, all fibers still exhibit a fibrous form (figure 4 and page 8 lines 10-22).

This is obtained in a process of heating one side of the web to a temperature greater than the temperature on the opposite side and sufficient to melt the low melting thermoplastic fibers (page 4 lines 7-10).

Therefore, it is more than likely that the panel of D1 also presents the following feature of claim 1:

"at least partial melting of the fibers, i.e. at least a partial loss of their fibrous phase and change into a viscous or viscoelastic phase, the relative distributions of the fraction of fibers that retain the fibrous phase and the fraction of the plastic material that took the viscous or viscoelastic state depending on the depth thereof in the sheet thickness."

Therefore, the subject-matter of independent claim 1 is not novel (Article 33 (2) PCT).

2.2) dependent claims 2-8

There is no indication in D1 of any symmetrical or asymmetrical distribution with respect to

the median plane, or linearity, or nature of the gradient as claimed in dependent claims 2-8. There is also no mention of a intermediate central region inside the panel where the fibers have retained their fibrous phase.

Therefore dependent claims 2-8 appears to be novel (Article 33 (2) PCT).

2.3) dependent claim 9

Although D1 comprises a blend of thermoplastic fibers, there is no indication of distribution profile of fibers and their respective fibrous or molten status as claimed in dependent claim 9.

Therefore, dependent claim 9 appears to be novel (Article 33 (2) PCT).

2.4) dependent claims 10-16, 18, 19, 22, 23, 27, 28 and 35

The additional features of dependent claims 10-16, 18, 19, 23, 27, 28, and 35 are also described in D1.

The panel of D1 contains polyethylene fibers (claim 5, page 6 line 31 - page 7 line 27). Those fibers are randomly arranged (page 8 lines 7 - 10 and figure 3).

D1 uses a blend of polyethylene terephthalate and polyethylene fibers (example 1).

D1 discloses a panel made out a nonwoven layer of thermoplastic fibers.

Heat and pressure are applied during the moulding operations (figure 6).

The heating is carried out by means of heating elements both above and below the web in order to quickly heat the web throughout (page 10 lines 1-25). It is more than likely that this heating is provided by radiation (figure 8).

Compression is applied right after (page 10 line 26 - page 11 line 31). The compressed conditions: 30% to 90% of claim 15, seem to be quite common in the field of compression moulding.

It is also more than likely that the heating is provided in one step (page 10 lines 13-25).

The heating of one side is performed at a temperature greater than 132 degrees Celsius (claim 13).

The basis weight of the panel of D1 is between 563 and 777 g/m² (table 2).

D1 describes three-dimensional molded articles (claim 1).

After molding, it is more than likely that the panels of D1 have smooth surfaces.

The subject-matter of claims 10-16, 18, 19, 22, 23, 27, 28 and 35 is therefore not novel

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(Article 33(2) PCT).

2.5) claim 17

Heating by infra-red radiation is not disclosed in D1.

Dependent claim 17 appears to be novel (Article 33(2) PCT).

2.6) dependent claims 20, 21, 24-26, 29-34

None of the additional features of dependent claims have been disclosed in D1.

Dependent claims 20, 21, 24-26, 29-34 appear to be novel in the sense of Article 33(2) PCT.

2.7) independent method claim 36

D1 describes a process of making of a thermoformable panel.

Heat is applied on one side of the web to a temperature greater than the temperature applied on the opposite side and sufficient to melt the low melting thermoplastic fibers (page 4 step b).

In the present application, the method of independent claim 36 includes the step of heating the mat to a temperature higher than the melting or softening of the fibers having the highest melting or softening temperature.

This method for fabricating the thermoformable panel has not been found in the prior art. Therefore, claim 36 appears to be novel in the sense of Article 33(2) PCT.

2.8) dependent claims method 37-65, 68, 69, 73-81

Dependent method claims 37-65, 68, 69, 73-81 are novel in the sense of Article 33(2) PCT.

2.9) dependent product claims 66, 67 and 83

The additional features of dependent claims 66, 67 and 83 were not found in D1.

Dependent product claims 66, 67 and 83 are therefore novel in the sense of Article 33(2)

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2.10) dependent product claims 70-72

The panels of D1 are suited for automobile trunk compartment and the like (page 1 lines 4-7).

The panel of claims 70-72 characterized in that they are used as interior covering panels or exterior covering panels or structural elements for vehicles does not make the claims novel.

Dependent product claims 70-72 are not novel in the sense of Article 33(2) PCT.

2.11) independent product claim 82

Claim 82 is an intermediate product obtainable by the method of claim 80 and characterized in that it is a flat or plane panel.

Such an intermediate flat panel is already disclosed in D3 as a fibrous pre-form which may be cut into sheets for later processing (page 9 lines 7-8).

Therefore, claim 82 is not novel (Article 33(2) PCT).

3) Inventive Step Article 33(3) PCT

3.1) dependent product claims 2-8, 9, 17, 20, 21, 24-26, 29-34

The additional features of claims 2-8, 9, 17, 20, 21, 24-26, 29-34 appear to be inventive (Article 33(3) PCT).

3.2) independent method claim 36

The closest prior art document (CPA) is D1. It discloses a method of making a nonwoven panel formed of a blend of relatively high melting fibers and relatively low melting thermoplastic fibers.

The method of the CPA (claim 11) forms a panel with one surface having a fibrous textile appearance and the opposite surface consisting of fused fibers providing thus the rigidity to the panel.

This method includes the step of heating one side of the mat at a temperature greater than

the temperature provided on the opposite side, the heating temperature being sufficient to melt the low melting thermoplastic fibers.

The distinguishing features of the subject-matter of claim 36 over the CPA is the heating of the mat to a temperature higher than the melting or softening temperature of the plastic material of the fibers having the highest melting point.

Consequently the problem solved by the application over the CPA is how to make a nonwoven panel of thermoplastic fibers having improved flexibility and mechanical strength.

This is obtained in the step of heating the mat. This heating causes the fibers to melt on both surfaces and to melt them to a variable degree along the depth of the panel thickness.

This solution is known from D3 to solve another problem, namely to autogenously bind a diaper facing sheet which also needs to remain soft.

Transposing this solution in the field of thermoformable panels for the automotive industry to solve the problem described hereabove does not appear to be obvious.

Therefore, claim 36 appear to be inventive Article 33(3) PCT.

3.3) dependent method claims 37-65, 68, 69, 73-75, 76-81

The additional features of claims 37-65, 68, 69, 73-75, 76-81 also appear to be inventive (Article 33(3) PCT).

3.4) dependent product claims 66, 67 and 83

The additional features of claims 66, 67 and 83 also appear to be inventive (Article 33(3) PCT).

4) Essential feature missing in independent claim 35.

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From the description of the present application, not only the temperature but also the time during which the heat is applied is an important factor to make the panel of this invention (description, page 17 lines 16-24). The so-called "hard or violent heating" appears to be an essential feature of the invention and must therefore be present in all independent method claims (Rule 6.3 PCT).